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Occupational Health & Safety

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ERGONOMICS

A BIBLIOGRAPHY OF

SELECTED REFERENCE WORKS

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INTRODUCTION

A selective bibliography on ergonomics is presented to direct interested readers to relevant topic areas. This listing includes primarily books, with some selected journal articles of a literature review nature, but does not include reports of original research work. Books are categorized under seven topic headings which contain a collective annotation for books covering the subject area. Topics include: general readings in ergonomics, worker characteristics, workplace layout and equipment design, environmental design, hours of work, organization and training at work, and relevant periodicals. The bibliography, while not intended to be all-inclusive, was written to assist workers, management and health and safety practitioners in finding useful sources of information.

NOTE: Books denoted by an asterisk are available from the Occupational Health and Safety Library, Library Services Branch, Alberta Community and Occupational Health.

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1. GENERAL READINGS

These books will familiarize the reader with the fundamental elements of ergonomics. They highlight the concept of interaction between people and their work environment, the importance of designing the workplace to meet human capabilities and limitations, and the relationship of well-being to productivity and performance. Readings address the history and theoretical background of ergonomics, its component disciplines, workplace, equipment and environmental design, human psychology and physiology, methods of studying work and practical applications in the workplace. They represent excellent choices for basic textbooks.

*Alexander, D. C., & Pulat, B. M. (1985). Industrial ergonomics: A practitioner's guide. Atlanta: Institute of Industrial Engineers.

*Burch, J. L. (Ed.). (1984). Ergonomics: The science of productivity and health: Capsule reviews of the principal literature in present-day ergonomics and human factors engineering. Lawrence: The Report Store.

*Eastman Kodak Company. (1983). Ergonomic design for people at work (Vol. 1). Toronto: Lifetime Learning Publications. (Vol. 2). New York: Van Nostrand Reinhold Company.

*Grandjean, E. (1980). Fitting the task to the man: An ergonomic approach (3rd ed.). London: Taylor and Francis.

*Kantowitz, B. H., & Sorkin, R. D. (1983). Human factors: Understanding people-system relationships. Toronto: John Wiley and Sons.

*McCormick, E. J., & Sanders, M. S. (1982). Human factors in engineering and design (5th ed.). Toronto: McGraw-Hill.

*Oborne, D. J. (1982). Ergonomics at work. Toronto: John Wiley and Sons.

*Singleton, W. T. (1982). The body at work: Biological ergonomics. New York: Cambridge University Press.

*Singleton, W. T. (1972). Introduction to ergonomics. Geneva: World Health Organization.

2. WORKER CHARACTERISTICS

The principles of ergonomics used to identify human characteristics (and consequently their abilities) are combined in this section of readings. Books emphasize the variability of people, which must be considered when designing the workplace for well-being and performance. Information includes: anthropometric data on human dimensions for equipment design; biomechanical aspects of forces generated on muscles and joints through various work postures; human sensory and psychological abilities to process information; and the physiological demands of work expressed through oxygen requirements and cardiovascular function.

A. Anthropometry

*Diffrient, N., Tilley, A. R., & Bardagjy, J. C. (1974). Humanscale 1/2/3. Cambridge, Mass: MIT Press.

*Panero, J., & Zelnik, M. (1979). Human dimensions and interior space. London: The Architectural Press.

*Roebuck, J. A., Kroemer, K. H. E., & Thomson, W. G. (1975). Engineering anthropometry methods. Toronto: John Wiley and Sons.

Webb Associates, Yellow Springs, Ohio. (1978). Anthropometric Source Book, Volumes I, II, III. National Aeronautics and Space Administration, Scientific and Technical Information Office. Distributed by National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia.

B. Biomechanics

*Chaffin, D. B., & Andersson, G. (1984). Occupational biomechanics. Toronto: John Wiley and Sons.

*Tichauer, E. R. (1978). The biomechanical basis of ergonomics: Anatomy applied to the design of work situations. Toronto: John Wiley and Sons.

*Von Heijne Wiktorin, C., & Nordin, M. (1986). Introduction to problem-solving in biomechanics. Philadelphia: Lea & Febiger.

C. Psychology (Information Processing, Skills, Learning Abilities, Etc.)

Bailey, R. W. (1982). Human performance in engineering, A guide for system designers. Englewood Cliffs, N.J.: Prentice Hall.

Edwards, E., & Lees, F. P. (1974). The human operator in process control. London: Taylor & Francis Ltd.

Wickens, C. D. (1984). Engineering psychology and human performance. Columbus,Ohio: Charles E. Merrill Publishing Company.

D. Work Physiology

*Brouha, L. (1967). Physiology in industry: Evaluation of industrial stresses by the physiological reactions of the worker (2nd ed.). Toronto: Pergamon Press.

Edholm, O.-G. (1967). The biology of work. New York: McGraw-Hill.

*Singleton, W. T., Fox, J. G., & Whitfield, D. (1973). An appraisal of physiological and psychological criteria in man-machine systems. London: Taylor & Francis Ltd.

3. WORKPLACE LAYOUT AND FURNITURE AND EQUIPMENT DESIGN

This section contains both general and specific references which address the human engineering aspects of workplace design through an analysis of jobs and their requirements. They promote detailed understanding of task components as essential in the development of guidelines for working conditions, organization, furniture and the equipment used at work. Included are ergonomic aspects of design for: assembly lines, office work, process control panels, video display terminals, manual materials handling tasks, and miscellaneous equipment such as hand tools, seating and machinery.

*Cakir, A., Hart, D. J., & Stewart, T. F. M. (1980). Visual display terminals. New York: Wiley.

*Dainoff, M. J. & Hecht-Dainoff, M. (1986) People and Productivity: A manager's guide to ergonomics in the electronic office. Toronto: Holt, Rinehart and Winston of Canada.

Davis, L. E., & Taylor, J. C. (1972). Design of jobs. London: Penguin Books Ltd.

*Grandjean, E., & Vigliani, E. (1980). Ergonomic aspects of video display terminals. London: Taylor & Francis.

*Greenberg, L., & Chaffin, D. B. (1977). Workers and their tools. Midland, Michigan: Pendell Publishing Co.

*Helander, M. (1981). Human factors/ergonomics for building and construction. Toronto: John Wiley & Sons.

Konz, S. (1979). Work design. Grid Series in Industrial Engineering.

*Kroemer, K. H. E. (1971). Seating in the plant and office. American Industrial Hygiene Association Journal, 32, 633-652.

*Kvalseth, T. O. (Ed.) (1983). Ergonomics of workstation design. Toronto: Butterworths.

*Rohmert, W., & Landau, K. (1983). A new technique for job analysis. New York: Taylor and Francis Inc.

*Sell, R. C., Crawley, J. E., Crockford, G. W., & Fox, J. G. (1977). Human factors in design and production. London: Taylor & Francis Ltd.

*Shackel, B. (1974). Applied ergonomics handbook. Guildford, England: Butterworth & Co.

Snook, S. H. (1978). Design of manual handling tasks. Ergonomics, 21, 963-985.

U. S. Department of Health and Human Services. (1981). Work practices guide for manual lifting. (DHHS [NIOSH] Publication No. 81-122), Cincinnati: National Institute for Occupational Safety and Health.

Woodson, W. E. (1981). Human factors design handbook: Information and guidelines for the design of systems, facilities, equipment and products for human use. New York: McGraw-Hill.

4. ENVIRONMENTAL DESIGN

Physical aspects of the working environment which affect health, comfort, working behaviour and efficiency are examined in this section. Factors such as noise, vibration, lighting, thermal conditions and shift work are addressed. For each of the above, readings provide introductory material to basic physics, physiological effects and guidelines for measurement, evaluation and control.

A. General

*Oborne, D. J., & Gruneberg, M. M. (1983). The physical environment at work. Toronto: John Wiley & Sons.

*NIOSH. (1973). The industrial environment - its evaluation and control. Washington, D.C.: US Department of Health, Education, and Welfare, National Institute for Occupational Safety and Health.

B. Thermal Comfort

*Cena, K., & Clark, J. A. (1981). Studies in environmental science 10: Bioengineering, thermal physiology and comfort. New York: Elsevier Scientific Publishing Co.

Fanger, P. O. (1982). Thermal comfort: Analysis and applications in environmental engineering. Malabar: Robert E. Krieger Publishing Co.

*LeBlanc, J. (1975). Man in the cold. Springfield: Charles C. Thomas.

McIntyre, D. A. (1980). Indoor climate. London: Applied Science Publishers.

C. Lighting

Hopkinson, R. G., & Collins, J. B. (1970). The ergonomics of lighting. London: McDonald Technical and Scientific.

*Kaufman, J. E., & Haynes, H. (Eds.). (1981). IES lighting handbook. New York: Illuminating Engineering Society of North America.

D. Noise and Vibration

*Bonney, T. B. et al. (1975). Industrial noise manual (3rd ed.). Akron, Ohio: American Industrial Hygiene Association.

*Brammer, A. J., & Taylor, W. (1982). Vibration effects on the hand and arm in industry. Toronto: John Wiley & Sons.

*Griffin, M. J. (1980). Vibration injuries of the hand and arm: Their occurrence and the evaluation of standards and limits. London: Health and Safety Executive.

Irwin, J. D., & Graf, E. R. (1979). Industrial noise and vibration control. Englewood Cliffs: Prentice-Hall Inc.

*Kryter, K. D. (1970). The effects of noise on man. New York: Academic Press.

*Michael, P. L. (1978). Industrial noise and conservation of hearing. In Clayton, G. D. and Clayton, F. E. (Ed.), Patty's industrial hygiene and toxicology (Vol. 1) (3rd ed.) (pp. 275-358). New York: John Wiley & Sons.

5. HOURS OF WORK

The following collection of books are devoted to the effects of hours of work including work rest cycles and shiftwork, on human health and performance. Underlying principles of circadian rhythms and chronobiology are discussed as they relate to human factors aspects of job design.

*Colquhoun, W. P., & Rutenfranz, I. J. (1980). Studies of shiftwork. London: Taylor & Francis.

Folkard, S. & Monk, T. H. (Ed.). (1985) Hours of Work: Temporal Factors in Work Scheduling. Toronto: John Wiley and Sons.

Johnson, L. C., Tepas, D. I., Colquhoun, W. P., & Colligan, M. J. (1981). Biological rhythms, sleep, and shiftwork. In E. D. Weitzman (Ed.), Proceedings of a Conference on Variations in Work-Sleep Schedules: Effects on Health and Performance, Advances in Sleep Research, Vol. 7. San Diego: S. P. Medical and Scientific Books.

*Ronen, S. (1984). Alternative work schedules: Selecting, implementing and evaluating. Homewood, Ill.: Dow Jones-Irwin.

Webb, W. B. (Ed.). (1982). Biological rhythms, sleep and performance. Wiley Series on Human Performance, D. H. Holding Series Editor. New York: John Wiley and Sons.

6. ORGANIZATION/TRAINING/MOTIVATION

The methods and principles of industrial and organizational psychology at work are addressed in this collection of books. These can be used to understand how and why people work, the organization of work to achieve maximum performance, and the role of management in achieving these goals. This knowledge of human behaviour helps to identify factors affecting job satisfaction and motivation which, if poor, can interfere with the physical benefits obtained from good ergonomic design. An understanding of organizational psychology can also assist in the development of training and educational programs to help meet personal, job and organizational needs.

*Bass, B. M., & Barrett, G. V. (1981). People, work and organizations: An introduction to industrial and organizational psychology. Toronto: Allyn & Bacon Inc.

*Dunnette, M. D. (1976). Handbook of organizational psychology. Chicago: Rand McNally College Publishing Co.

*Munson, L. (1984). How to conduct training seminars. Toronto: McGraw-Hill Book Company.

*Tannenbaum, A. S. (1966). Social psychology of the work organization. Belmont, Calif.: Wadsworth Publishing Co. Inc.

7. PRACTICAL HANDBOOKS/ERGONOMIC APPLICATIONS

Oriented for the layperson, these books address practical applications of ergonomics principles to real life work settings. To assist the reader in conducting systematic ergonomic assessments, most books are accompanied by practical design data, illustrations and step-by-step checklists.

*British Columbia Ministry of Labour, Occupational Environment Branch. (1981). Working with video display terminals.

*British Society for Social Responsibility in Science (BSSRS). (1977). A worker's guide to the health hazards of vibration and their prevention. London, England: BSSRS.

*Hansson, J., & Pettersson, B. (1980). An ergonomic checklist for transport and materials - handling machinery. Stockholm, Sweden: National Board of Occupational Safety and Health.

*United Auto Workers. (1982). Strains and sprains: A worker's guide to job design.

*Webb, R. D. G. (1982). Industrial ergonomics. Toronto: Industrial Accident Prevention Association.

Weiner, J., & Maule, H. (1977). Case studies in ergonomic practice. Volume I: Human factors in work, design and production. London: Taylor and Francis.

8. PERIODICALS

Periodicals dealing with the subject of ergonomics are listed below for those interested in the current results of literature surveys, original research, evaluations of experimental techniques, and the application of research to practical settings. Material covers office and industrial work situations, through to consumer (product design), transportation and sports applications. Ergonomics Abstracts, which reviews over 150 journals for articles pertaining to ergonomics, is also referenced.

*Applied Ergonomics. London: Butterworth & Co. Ltd.

*Ergonomics. London: Taylor & Francis Ltd.

*Ergonomics Abstracts. London: Taylor & Francis Ltd.

*Human Factors Journal. Santa Monica: The Human Factors Society Inc.

Office Ergonomics Review. Toronto: Descom Publishing Inc.

Proceedings of the Ergonomics Society's Conference. London: Taylor & Francis.

*Proceedings of the Human Factors Society Annual Meeting. Santa Monica: The Human Factors Society Inc.

*Proceedings of the Human Factors Association/Association canadienne d'ergonomie. Rexdale, Ontario: The Human Factors Association of Canada/Association canadienne d'ergonomie.

To obtain references denoted by an asterisk (*), contact:

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1021 - 10 Avenue, S.W.
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Telephone: (403) 297-7282

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